Hewlett Packard Enterprise

HPE ProLiant Power Interface Control (PPIC) Utility

User Guide

for version 2.3.0.0 and later

Abstract

This guide describes chassis and rack architecture, power management, control utilities, and command and options descriptions for select HPE ProLiant servers.

Part Number: 583301-008
September 2016
Edition: 8

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Introduction

HPE ProLiant Power Interface Control overview

The HPE ProLiant Power Interface Control (PPIC) Utility is a command-line utility used to monitor and configure the power control configuration for supported servers. This utility enables the following views:

- Chassis power level and power configuration display/view
- Poll chassis power level
- Calibration and power limits
- Set power configuration modes
- Support of logging through the standard syslog

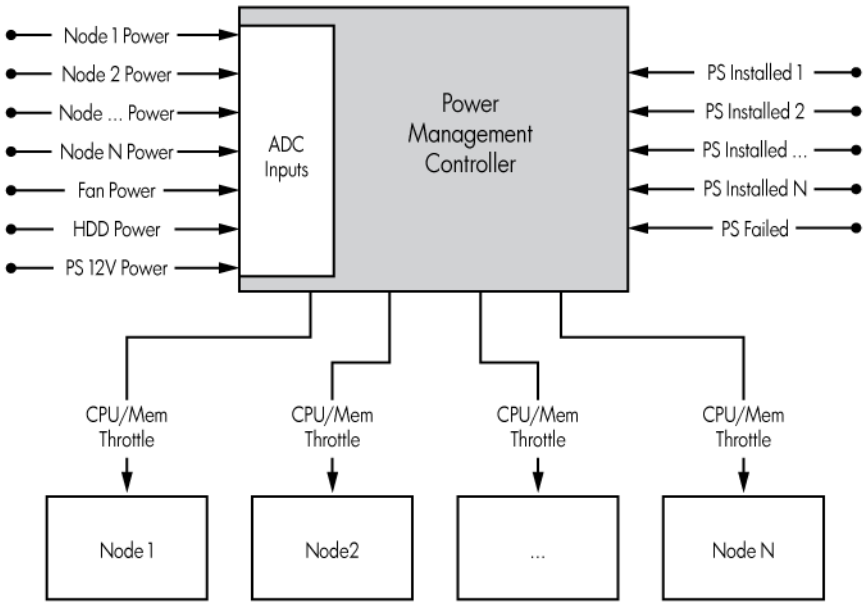
NOTE: The use of the term server represents nodes, server nodes, server trays, and cartridges.

The PPIC utility must only be executed through one server node per chassis.

To determine if a server supports power capping, see the server user guide or the chassis setup and installation guide in the Hewlett Packard Enterprise Information Library (**http://www.hpe.com/info/docs**).

Power Management Controller

The Power Management Controller is embedded and can monitor power consumption for all aspects of an HPE chassis. The Power Management Controller can also throttle the speed of the processors and memory in each node within the chassis to maintain a pre-set power budget.



Power capping

The following firmware requirements must be met for power capping:

- For HPE ProLiant SL s6500 Chassis only, SL Chassis Firmware must have version 4.30 or later.
- All nodes in the chassis must have LO100 Advanced Pack, iLO Scale Out, or iLO Advanced License.

To determine if a server supports power capping, see the server user guide or the chassis setup and installation guide in the Hewlett Packard Enterprise Information Library (**http://www.hpe.com/info/docs**).

Power Measurement

Power measurement utility

This utility displays the power reading calculated by the chassis Power Management Controller.

As with any measurement system, variations in temperature, input power, and system loads impact the accuracy of the power calculations. All power readings displayed by this utility have a -/+ 5% tolerance.

HPE ProLiant Power Interface Control Utility

Installing the PPIC utility

1. Go to the Hewlett Packard Enterprise Support Center website (**http://www.hpe.com/info/hpesc**).
2. Enter the server name in the **Enter a product name or number** field, and then click **Go**.
3. Select **Get drivers, software, & firmware**.
4. Select your server.
5. In the **Driver language** field, select the driver language.
6. In the **Operating systems in x** field, where *x* is the language selected in the **Driver language** field, select the operating system.
7. Scroll down to **Utility - Tools**.
8. Click the **Download** button corresponding to the **HPE ProLiant Power Interface Control (PPIC) Utility**.
9. Extract the files using WinZip to a directory on your drive.

Running the PPIC utility on a Microsoft Windows OS

1. Log in to the server.
2. Add the executable into the directory.
3. Enter and run the following command:

   ```
   ppic.exe
   ```

Running the PPIC utility on a Linux OS

1. Log in to the server.
2. Enter and run the following command:

   ```
   ./ppic
   ```

IMPORTANT: If you are running a 64-bit Linux platform, be sure to install the 32-bit C++ standard libraries.

PPIC commands and options

This section defines the commands and options that can be used in the PPIC utility.

PPIC can only process one command at a time.

For an option to process successfully, the option needs to be specified with a valid command.

Synopsis

```
ppic [-h] [-d] [-v] [-p -ffrequency -tduration] [-c] [-s -mmode -lpower]
[-ofilename]
```

-h

Help menu:

This command displays a summary of supported commands and options.

-d

Display chassis power level and configuration:

This command displays the instantaneous power reading for the entire chassis. This includes Total Chassis Power (AC): the sum of all power consumed by all present nodes and chassis subsystems.

For more information, see "Set Power Configuration Mode ("-s -mmode -lpower" on page 9)."

-v

Verbose:

This command affects the output of Display chassis power level and configuration and Poll chassis power level. Enable verbose mode to obtain the following information about the chassis power consumption:

- Maximum Chassis Power Available (AC): the total power supply capacity available in the chassis
- Total Chassis Power (AC): the sum of all power consumed by all present nodes and chassis subsystems
- Total Chassis Peak Power (AC): the highest calculated power value for the chassis since it was last cleared
- Total Chassis Peak Power (DC): the highest calculated power value for the chassis since it was last cleared
- Bay Power (DC): the instantaneous power consumption calculated at each bay. (**Example**: A 2U node connected on bay 3 has a total power consumption of bay 3 plus bay 4.)
- Total Fan Power (DC): instantaneous fan power consumption of all active fans in the chassis
- Storage Backplane power (DC): the instantaneous power consumption calculated at the backplane

For more information, see "-s -mmode -lpower (on page 9)."

-p -ffrequency -tduration

Poll chassis power level:

This command polls the chassis status and configuration every *frequency* seconds for a total duration of *duration* seconds. This includes Total Chassis Power (AC): the sum of all power consumed by all present nodes and chassis subsystems.

To obtain detailed information about the chassis power consumption, enable Verbose ("-v" on page 8) mode (-v).

-c

Calibrate and display power limits:

This command forces the system go into idle state to get the lowest possible power configuration. Once the value has been obtained, the system displays the following updated information:

- Maximum Chassis Power Available (AC): the total power supply capacity available in the chassis

- Minimum Chassis Power Achieved (AC): the lowest power achieved in idle state with the current system configuration
- Power Limits (AC): the Power Control Mode power range that guarantees full operation

For more information, see "-s -mmode -lpower (on page 9)."

IMPORTANT: System performance degrades while acquiring Power Profile.

IMPORTANT: When Power Control Configuration Mode is set to User Configurable (3), the system will return to the default Power Control Configuration Mode (1) after system calibration completes. The user is responsible for setting a new Power Control Configuration Mode and level.

-s -mmode -lpower

Set power configuration mode:

This command updates the chassis Power Control Configuration Mode. The Power Management Control table shows the valid values for `mode`. `Power` is required when setting Power Control Configuration to User Configurable.

Mode	Configuration
0	**No Redundancy** All power-capping is disabled. This mode can be used to minimize any possible performance impact of power-capping logic. In this mode, any power event that results in the load exceeding the output capacity of the online power supplies might cause one or more servers to experience a power fault.
1	**AC Redundancy with throttling (Default mode)** This is the default power capping mode. This mode allows the maximum number of nodes to run by engaging power-capping if the power draw from the chassis attempts to exceed the load supported by the active power supplies. In this mode, the system is expected to survive (with degraded performance) an unexpected power loss to one or more of the power supplies.
2	**Full AC/DC Redundancy** Power-capping is enforced such that system has N+1 power redundancy. In this mode, the system will throttle the nodes, allowing for one of the available power supplies to be held in reserve. If only one power supply is available, the system will throttle the nodes as to allow the full use of that power supply's capacity.
3	**User Configurable (Available only with the LO100 Advance Pack, iLO Scale Out, or iLO Advanced Pack)** The user can specify a valid power cap value from a pre-defined range. The cap includes all server nodes, fans, and drives. User configurable mode requires an iLO Scale Out or iLO Advanced license.
4	**Rack Level Dynamic Power Capping** In conjunction with APM, the user can specify a maximum power capacity for the entire rack. The APM dynamically allocates power to the applicable chassis within the rack to maximize performance given the available power. For more information, see the *HPE Apollo Platform Manager User Guide* on the Hewlett Packard Enterprise website (**http://www.hpe.com/support/APM_UG_en**). This mode is only supported through APM.
5	**Power Feed Redundancy** When used with an A+B power feed configuration, this mode throttles the system 100%, bringing the nodes to a complete stop if a power feed loss is deduced. Full throttling continues until the power feed is brought back online. In this mode, the system is expected to survive an unexpected loss of an entire power feed to half of the power supplies.

Defining the Power Control Configuration level

Use the following steps to properly define the Power Control Configuration level for User Configurable (3) mode:

1. Run the target system (all nodes in the chassis) at the production level load.
2. Calibrate the chassis to obtain the power profile and display the information `(ppic -c)`.
3. Set the Power Control Configuration Level within the specified Power Capping Limit Range obtained in step 2 (`ppic -s -m3 -lpower`, where `power` is the preferred set point in Watts AC).
4. Verify the chassis power level and configuration by enabling verbose mode `(ppic -d -v)`.
5. Monitor chassis power so that it remains within 5% of the preferred power level set point `(ppic -p -f1 -t10)`.

IMPORTANT: When Power Control Configuration Mode is set to User Configurable (3), the system will return to the default Power Control Configuration Mode (1) after system calibration completes. The user is responsible for setting a new Power Control Configuration Mode and level.

-ofilename.log

Select output log filename:

This option allows overriding the output filename, where *filename* is the filename and *log* is the extension. By default, the screen output is also saved into the *ppic.log*. Every time this utility is executed, the default log is overwritten with the latest output.

Configuration examples

Display chassis power level and configuration and store output in power.log file

```
ppic -d -opower.log
```

Poll chassis power level every 1s for 10 minutes and enable verbose mode

```
ppic -p -f1 -t600 -v
```

Set Power Configuration Mode to AC Redundancy with throttling (Default Mode) and store output in config.log

```
ppic -s -m1 -oconfig.log
```

Documentation feedback

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